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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TETSUYA HAYASHI and TSUMORU OHATA

Appeal 2010-004292
Application 10/576,421
Technology Center 1700

Before PETER F. KRATZ, CATHERINE Q. TIMM, and
JEFFREY T. SMITH, *Administrative Patent Judges*.

KRATZ, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1-8. We have jurisdiction pursuant to 35 U.S.C. § 6.

Appellants' claimed invention is directed to a lithium ion secondary battery and a method of making the battery. The battery includes an electrode group including a winding core, a positive electrode, a negative electrode, and a porous film comprising a binder and filler. The positive electrode includes a core member and an active material layer carried thereon. The negative electrode includes a core member and an active material layer carried thereon. The electrodes are wound around the winding core. The porous film comprising a filler and a binder is formed on a core member of one of the electrodes. Further details can be derived from a reading of the claims. Claim 1 is illustrative and reproduced below:

1. A lithium ion secondary battery including an electrode group that comprises:

(1) a winding core,

(2) a positive electrode comprising a positive electrode core member and a positive electrode active material layer carried on said positive electrode core member,

(3) a negative electrode comprising a negative electrode core member and a negative electrode active material layer carried on said negative electrode core member, and

(4) a porous film formed on at least one of said positive electrode and said negative electrode,

wherein said porous film comprises a filler and a binder,

said positive electrode and said negative electrode are wound around said winding core, and

said positive electrode and/or said negative electrode have/has, on the initial winding side, a region where said active material layer is carried on neither side of said core member and an adjoining region

where said active material layer is carried on only one side of said core member.

The Examiner relies on the following prior art references as evidence in rejecting the appealed claims:

Reichert	US 6,217,623 B1	Apr. 17, 2001
Komatsu	US 2002/0146626 A1	Oct. 10, 2002
Mizutani	US 2003/0180605 A1	Sep. 25, 2003
Takayama	JP 09-035738	Feb. 7, 1997

Claims 1, 3-5, 7, and 8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mizutani in view of Reichert and Takayama. Claims 2 and 6 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Mizutani in view of Reichert, Takayama, and Komatsu. We reverse the stated rejections for substantially the reasons set forth by Appellants in the Appeal Brief and Reply Brief as further indicated below.

The principal issues generated by Appellants' arguments and the Examiner's obviousness position relate to the propriety of the Examiner's proposed modification of Mizutani detailed in the Examiner's first stated rejection, particularly as they pertain to the two independent claims on appeal; that is, claims 1 and 5 (Ans. 3-9: App. Br. 5-7; Reply Br. 2-4).

Namely, the question is: Has the Examiner discharged the burden of furnishing a sustainable basis for the proposed modifications including a reason or explanation as to why one of ordinary skill in the art would have been led to: (1) use the winding core of Takayama in forming Mizutani's battery and (2) apply a sprayed porous film layer, as taught by Reichert, to an anode or cathode of the battery of Mizutani, and which rationales both withstand the scrutiny occasioned by Appellants' countervailing argument?

We answer this question in the negative for substantially the reasons indicated in the Appeal Brief and Reply Brief.

For example and respecting the winding core, the Examiner asserts that (Ans. 6):

> It would have been obvious to one of ordinary skill in the art at the time of the invention to add the winding core with a recess at a position where it comes into contact with the starting position of the active material layer of the inner electrode of Takayama to the lithium ion secondary battery of modified Mizutani et al. in order to reduce or eliminate the level difference caused by the inner electrode thickness and thereby create a reliable battery (paragraphs [0006] & [0020]).

Following a discourse on Appellants' arguments set forth in the Appeal Brief, the Examiner concludes that (Ans. 12):

> Therefore, the Examiner maintains that it would be obvious to one of ordinary skill in the art that it would be advantageous to add the winding core with a recess at a position where it comes into contact with the starting position of the active material layer of the inner electrode of Takayama instead of using a removable jig such as that used in Mizutani.

Like Appellants, we are not persuaded that the Examiner's explanation offers an apparent reason that would have led one of ordinary skill in the art to modify Mizutani's battery or method or making same by using Takayama's winding core therein, as advocated by the Examiner.

As argued by Appellants, Mizutani employs a removable jig about which a separator is wound, which separator has positive and negative electrodes previously applied thereon (App. Br. 5; Mizutani, paras. 0013, 0038, and 0066-68, Figs. 1 and 7). The jig is removed by Mizutani and the

wound electrode has a desired flat shape, after the winding step (para. 0014, 0069, and 0070).

The Examiner asserts that the proposed use of the winding core of Takayama to form the battery of Mitzutani would be expected to favor Mizutani's battery with the advantages set forth by Takayama (Ans. 6 and 12; Takayama, paras. 0006 and 0020). However, the referenced portions of Takayama relate to making "precise, cylindrical wound-type electrodes" that are reliable and do not result in an elliptical shape whereas Mizutani is directed to making a flat shaped battery having good discharge capacity with a removable jig (Compare Takayama paras. 0006 and 0020 with Mizutani, paras 0013, 0038, 0066-0068). Thus, the Examiner's explanation for substituting a winding core of Takayama for the removable jig of Mizutani does not afford an apparent reason to combine that would have led one of ordinary skill in the art to the proposed modification as Mizutani is concerned with forming a flat-shaped battery, not a cylindrical battery as proposed as the rationale for the combination with Takayama.

Similarly, the Examiner has not carried the burden to explain why one of ordinary skill in the art would have been led to employ the porous film of Reichert using the sprayed on technique taught by Reichert in place of the porous film layer (separator) of Mizutani, as proposed by the Examiner (Ans. 4-6). This is because Mizutani disposes positive and negative electrodes on a seamless separator (porous film) in forming the battery thereof and the Examiner has not reasonably explained how the spray on film of Reichert could be employed as a separator as a replacement for the separator of Mizutani (App. Br. 6-7; Reply Br. 2-4; Mizutani, paras. 0012, 0066-0069, Figs. 1 and 7).

On this record, we agree with Appellants that the Examiner has not carried the burden of presenting an apparent reason to combine the applied references utilized in the first stated rejection that would have prompted one of ordinary skill in the art to undertake the modifications of Mitzutani proposed by the Examiner.

As the additionally applied reference employed in the Examiner's obviousness rejection of dependent claims 2 and 6 does not cure the aforementioned deficiencies in the base rejection, we likewise reverse this second stated rejection.

ORDER

The Examiner's decision to reject the appealed claims is reversed.

REVERSED

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